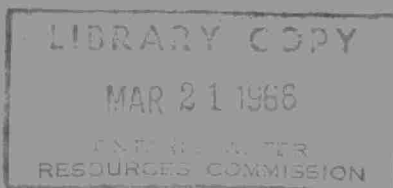




THE
ONTARIO WATER RESOURCES
COMMISSION
WATER POLLUTION SURVEY
of the
TOWNSHIP OF ORILLIA
COUNTY OF SIMCOE

1966



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R E P O R T

on a

WATER POLLUTION SURVEY

of the

TOWNSHIP OF ORILLIA

County of Simcoe

March 1966

Division of Sanitary Engineering

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Table of Laboratory Results

Map of Township of Orillia showing approximate
sampling locations.

R E P O R T

ONTARIO WATER RESOURCES COMMISSION

INTRODUCTION

The purpose of this survey was to assess the conditions in the vicinity of the Township of Orillia with reference to the quality of the watercourses in the township.

Water quality investigations of this type are performed routinely and upon request, and are primarily designed to locate and record any existing sources of pollution.

Recommendations are made with respect to pollution abatement and prevention.

GENERAL

The Township of Orillia is located in the north-easterly section of the County of Simcoe. The 1964 assessed population of 8,199 (1965 Municipal Directory) is more concentrated in the southerly and easterly portions of the township. The population figure increases considerably in the Lake Couchiching, Severn River and Sparrow Lake areas during the summer tourist influx.

DRAINAGE

Drainage in the central and westerly portions of the township is provided by the North River and its tributaries, while the north and easterly areas drain to Lake Couchiching and the Severn River.

WATER SUPPLY

Water works systems in operation in the Township of Orillia are as follows:

(1) The hamlet of Washago water works is owned by the township. Water for the community of Washago is obtained from the Severn River, chlorinated and pumped to the distribution system.

(2) The water works serving the Ontario Hospital School property utilizes spring water as the source of supply. The water is chlorinated and pumped directly into the distribution systems.

(3) Water systems serving the West Orillia and Ward Subdivisions are privately operated drilled wells and water is pumped directly into multiple distribution systems.

(4) The Town of Orillia water supply system provides an additional water supply for the Ontario Hospital and also services several streets located in the township bordering the town.

(5) Water supply in the remaining township areas is obtained from private well supplies.

The Township is negotiating with the Town of Orillia for the extension of the Orillia municipal water supply to service more of the areas of the township bordering the town. The area affected by this proposed extension would be the area bordered by Lake Couchiching, the Town of Orillia and Highway No. 11. A separate municipal water supply project has been

discussed for the Cumberland Beach area.

SANITARY WASTE DISPOSAL

Domestic sewage from the majority of the residences is disposed of by means of a septic tank and sub-surface tile field systems. The installation of private sewage disposal units is supervised by the Simcoe County Health Unit.

The water pollution control plant operated in the Town of Orillia serves the Ontario Hospital located in the township south of the town and a portion of the township north of the town in the West Street area. Extension of this sewer system to service areas of the township near Grace Avenue and Highway No. 11B and north of the town in the area south of Highway No. 11, has been discussed.

SOURCES OF POLLUTION

Boat Wastes

The lakes and rivers in the area provide recreational facilities such as swimming, fishing and boating.

The increase in boat traffic through the Trent Canal system has created local concern regarding the discharge of wastes from the larger vessels. The Department of Transport encourages the use of public washrooms and refuse collection services provided at designated areas along this route. A resolution passed by the Township of Orillia Council on May 20, 1964, recommended that "disposal sites be investigated and instituted for the convenience of the boating public and that penalties be enforced upon a person or persons found wilfully and negligently disposing of garbage or sewage in this waterway".

The supervision of watercraft by local legislation and surveillance will assist in minimizing these vehicles as sources of pollution. Regulations governing waste disposal from recreational watercraft are under study by this Commission. We are presently preparing draft regulations which will apply to all pleasure boats 20 feet or more in length having an enclosed or partially enclosed structure designed for the purpose of providing sleeping accommodation.

REFUSE DISPOSAL

A municipal dump serving the township is located one mile north of Highway No. 11 between Concession Roads six and seven. Daily incineration and periodic earth cover are the methods of control.

This site is sufficiently isolated from watercourses to prevent surface water pollution.

ONTARIO HOSPITAL SCHOOL BARN DRAINAGE

There is a farm operated in conjunction with the Ontario Hospital School. Complaints have originated concerning drainage from the stock barns gaining access to Mill Creek. An investigation by Commission field staff on June 10, 1965 revealed that recent alterations had redirected the waste from the problem area near Highway 11B at the Mill Creek bridge. The results of samples submitted for analysis (listed on the following page as Sample Set No. 1) indicated that contaminating waste was gaining access to Mill Creek.

Further investigation and the sampling programme undertaken in conjunction with this report revealed that wastes from the floor drains in the piggery and horse stable were discharged

by gravity to a seepage pit. This flow is directed by a 10-inch diameter conduit to an open ditch which directs area field drainage to Mill Creek. Results of laboratory analyses (listed below as Sample Set No. 2) of samples collected from this barn drainage and upstream and downstream from the outfall verify that contaminating waste from the Ontario Hospital School is contributing to pollution of Mill Creek.

Sample Set No. 1

(Refer to appended map for location)

<u>Sample Point No.</u>	<u>Location</u>	<u>Date</u>	<u>5-Day BOD (ppm)</u>	<u>Susp. Solids (ppm)</u>	<u>Membrane Filter Coliforms per 100 ml</u>
M-0.95	Mill Cr downstream from Hwy.#11B.	June 14/65.	1.6	2	800
M-1.15	Mill Cr. at Hwy.#11B.	June 14/65.	1.6	4	12,000
M-1.35	Mill Cr. upstream from Hwy.#11B.	June 14/65.	1.2	8	86,000

Sample Set No. 2

M-1.35	Mill Cr. downstream from O.H.S.	July 28/65.	3.2	16	16,000
M-1.55	Mill Cr. outfall from Ontario Hospital Barns.	July 28/65.	4.2	12	810,000
M-1.75	Upstream from O.H.S.	July 28/65.	0.8	2	124

The discharge of contaminating waste from the Ontario Hospital School Barn drainage to Mill Creek necessitates remedial alterations. The methods of control as discussed with Mr. Ray Stutevant, Farm Superintendent by the Commission field staff should be explored in further detail.

CUMBERLAND BEACH AREA

The Cumberland Beach subdivision located on the north shore of Lake Couchiching has a population of approximately 500. Many of the summer cottages have been winterized for permanent occupancy. The limited area of the lots in some parts of the subdivision, has made the installation of septic tank disposal systems and the location of individual water supplies difficult.

Drainage in the area is to Lake Couchiching or Bayou Creek. Although no surface water was noted in the low area during this survey, heavy spring run-off could cause flooding conditions particularly at the Lake-Shore Drive lots. This condition has recently been alleviated to some extent by street ditches and the storm sewer which traverses Lot 35 Registered Plan 811.

It was reported by the health unit that water supplies in the Cumberland Beach area were generally satisfactory but that some pollution of private wells had occurred as a result of spring flooding.

The township has indicated to the Commission in previous correspondence that some preliminary investigations have been made concerning the provision of municipal sewerage and water supply systems for this subdivision. The predominance of small lots and a high water table in the above mentioned areas of this subdivision indicate that a communal system of water supply and sewage disposal would be advisable.

INDUSTRIAL WASTE DISPOSAL

Industry located in the township is minimal. A brief description of the major industries is listed on the following page.

Montagues' Dead Animal Disposal Plant

This plant is engaged in the processing of 30 beasts per week for the pet food trade. These animals are dead on arrival at the plant and are supplied from local herds.

All inedible offal is collected by Gordon Young Company, Toronto, and hides are shipped to Levine Bros., Toronto. The paunch manure is spread on the fields and utilized as fertilizer.

A septic tank and subsurface tile field was being constructed under the supervision of the Simcoe County Health Unit at the time of the field investigations. The floor and equipment wash-up water will be directed to this septic tank.

These premises will be re-inspected by Commission field staff in order to assess this new method of waste disposal.

MULTI-MILK DISTRIBUTION STATION

Processed milk products are delivered to this outlet for distribution in the area.

Wastes from these premises which are primarily domestic in nature, are discharged to a septic tank and tile field.

UTHOFF QUARRY

The operations of this quarry consist essentially of the mining and crushing of limestone. There was no waste discharge to a watercourse.

Industries located in the township did not appear to be contributing to stream pollution. However, due to the type of waste discharged by Montague's Dead Animal Disposal Plant and the recent alterations, these premises will be inspected on a routine basis by Commission field staff.

ANALYSES OF SAMPLES

Samples were collected from local watercourses and from surface waters that adjoin the township. The results of samples submitted for laboratory analysis by Commission field staff in 1964 and 1965 are recorded in Table No. 1.

The Simcoe County Health Unit performs an extensive sampling programme of watercourses in the township. The results of appropriate samples collected by the Unit have been tabulated in Table No. II.

The laboratory results of all samples recorded in Table No. 1 were within the Commission objectives for surface waters used for recreational purposes in Ontario. These results do not include the analyses of samples collected in Mill Creek which are discussed in another section of the report.

Although certain results of health unit samples recorded in Table No. II have shown adverse bacteriological conditions, the water quality has been generally satisfactory. The highly variable results of some of the samples collected by members of the Simcoe County Health Unit in the North River and its tributaries may be attributed to farm stock which water in the river or agricultural drainage. There are no known sources of pollution.

SUMMARY AND CONCLUSIONS

Summary

In general, the watercourses in the Township of Orillia are satisfactory for recreational purposes.

Barn drainage from the Ontario Hospital School is contributing to pollution of Mill Creek.

Industry which is not extensive in the township is not considered to be a major source of water pollution.

In the Cumberland Beach area a combination of high water table and inadequate space available over a considerable portion of the sub-divided and built-up areas have presented problems of malfunctioning sewage disposal systems and the contamination of some water supplies. Although the results of laboratory analysis of samples collected in the Cumberland Beach area of Lake Couchiching and Bayou Creek were within Commission objectives, it would be advisable for the township to pursue their preliminary discussion to provide communal services for this area.

Negotiations for the extension of the Town of Orillia, municipal water and sewerage facilities to service those areas of the township bordering the town have been initiated.

Regulations governing pollution from recreational water craft are presently under study by this Commission.

The use of the facilities presently provided by the Department of Transport along the Trent Waterway for the disposal of sanitary wastes and refuse should be encouraged.

The posting of the signs distributed to the township by the Water Quality Surveys Branch of this Commission along appropriate boating routes may alert boaters to desist in the discharging of contaminating waste to the watercourses.

RECOMMENDATIONS

1. The Ontario Hospital School should investigate alternate methods of disposal of drainage from the stock barns which will prevent pollution of Mill Creek.

2. The township should continue to maintain an active interest in pollution abatement and control.

3. This Commission should be kept informed of all progress in negotiations to provide municipal water supply and pollution control facilities for the built-up areas of the township.

All of which is respectfully submitted.

District Engineer



C.E. McIntyre, P. Eng.

Approved by:



J.R. Barr, Director,
Division of Sanitary Engineering.

bw

Prepared by:

D.J. Currie.

EXPLANATION AND SIGNIFICANCE OF LABORATORY ANALYSES

(A) Bacteriological examinations were performed on samples from the watercourse. The Membrane Filter technique was used to obtain a direct enumeration of coliform organisms. These organisms are normal inhabitants of the intestines of man and other warmblooded animals. They are always present in sewage and are generally minimal in other pollutants. The results of the examinations are reported as M.F. Coliform Count per 100 ml.

The Commission's objective for surface waters in Ontario is a coliform count of not greater than 2,400 organisms per 100 ml.

(B) Chemical Analysis

The chemical analysis performed on stream and outfall samples included determinations for biochemical oxygen demand, suspended solids and in some instances, turbidity.

(I) Biochemical Oxygen Demand (BOD)

Biochemical Oxygen Demand is reported in parts per million (ppm) and is an indication of the amount of oxygen required for stabilization of decomposable organic matter present in sewage, polluted waters, or industrial wastes. The completion of the test requires five days under the controlled incubation temperature of 20°C. The Commission's water quality objectives

- (i) for stream water - a 5-Day BOD of not greater than 4 ppm.
- (ii) for storm sewer, sewage treatment plant and industrial waste discharges - a 5-Day BOD of not greater than 15 ppm.

(II) SOLIDS

The laboratory does tests to determine the total and suspended solids in a sample. The value for dissolved solids is

determined by taking the mathematical difference between the total and suspended solids.

The concentration of suspended solids expressed in parts per million (ppm) is generally the most significant of the solids analysis in regard to stream water and outfall discharge qualities.

The OWRC objective for a discharge is a suspended solids concentration of not greater than 15 ppm.

(III) TURBIDITY

Turbidity is caused by the presence of suspended matter such as clay, silt, finely divided organic matter and plankton and is an expression of the optical property of a sample. The results are reported in "Silica Units".

TABLE I

Sampling Point No.	Description	Date	5-Day BOD (ppm)	SOLIDS (ppm)			Lab. No.	M.F. Coliform Count/100 ml
				Total	Susp.	Diss.		
TS-208.0	Trent Canal at Hwy.#11.	Aug.27/64.	1.2	150	2	148	R-14647	26
		July 15/65.	0.4	152	6	146	R-14024	10
TS-209.4	Severn R. above bridge at Hwy. #69.	Aug.27/64.	1.2	146	4	142	R-14648	42
		July 15/65.	0.3	174	4	170	R-14025	14
TS-214.0	Severn R. bridge above Wasdell Falls.	Aug.27/64.	0.8	128	2	126	R-14649	30
		July 15/65.	0.8	156	6	150	R-14026	16
TS-216.6	Severn River from Hwy.#11 Bridge at Port Severn.	Aug.27/64.	1.3	130	2	128	R-14650	100
		July 15/65.	0.4	144	5	139	R-14027	22
TS-209.6	Trent Canal at Locks No. 42.	Aug.27/64.	0.9	140	2	138	R-14651	40
		July 15/65.	0.3	174	4	170	R-14028	18
TS-210.0	Severn R. at Concession Road No. 15.	Aug.27/64.	1.2	130	1	129	R-14652	520
		July 15/65.	0.4	158	4	154	R-14029	24
TS-211.3	Severn R. at Concession Road No. 14.	Aug. 27/64.	1.0	144	1	143	R-14653	50
		July 15/65.	1.0	144	1	143	R-14030	44
TS-214.3	Severn R. from swing bridge 1 mile downstream from Sparrow Lake.	Aug. 27/64.	2.1	144	1	143	R-14654	70
		July 15/65.	0.1	176	5	171	R-14031	6

TABLE I (CONTINUED)

Sampling Point No.	Description	Date	5-Day BOD (ppm)	SOLIDS (ppm)			Lab. No.	M.F. Coliform Count/100 ml
				Total	Susp.	Diss.		
B-0.0	Bayou Creek at Lake Couchiching.	Aug. 26/64.	1.1	174	1	173	R-14655	30
B-1.3	Bayou Creek at Cumberland Park Rd.	Aug. 26/64.	1.1	242	2	240	R-14659	1,700
LC-3	Lake Couchiching offshore from Cumberland Beach Subdivision.	Aug. 26/64.	1.1	144	1	143	R-14656	90
		July 15/65.					R-14038	68
LC-3A	Lake Couchiching offshore from Cumberland Beach Subdivision.	Aug. 26/64.	1.2	162	6	156	R-14657	220
		July 15/65.					R-14054	34
LC-4	Lake Couchiching offshore from Cumberland Beach Subdivision.	Aug. 26/64.	1.1	152	8	144	R-14658	12
		July 15/65.					R-14039	10
LC-4A	Lake Couchiching offshore from submerged storm sewer.	July 15/65.	0.2	168	4	164	R-14055	112
LC-5	Lake Couchiching as indicated on map.	July 15/65.					R-14040	8
LC-6	Lake Couchiching as indicated on map.	July 15/65.	1.0	172	1	171	R-14041	16
LC-7	Lake Couchiching as indicated on map.	July, 1965.					R-14042	4

TABLE I (CONTINUED)

<u>Sampling Point No.</u>	<u>Description</u>	<u>Date</u>	<u>5-Day BOD (ppm)</u>	<u>SOLIDS (ppm)</u>			<u>Lab. No.</u>	<u>M.F. Coliform Count/100 ml</u>
				<u>Total</u>	<u>Susp.</u>	<u>Diss.</u>		
LS-44	Lake Simcoe at Carthew Bay.	July 15/65.					R-13383	0
LS-43	Lake Simcoe as indicated on map.	July 15/65.					R-13384	0
CN-24	North River (Branch at Side Rd. 6 - West of Montagues' Dead Animal Disposal Plant.)	July 28/65.	0.6	300	24	276	R-15289	126
CN-21.8	North River at Road Allowance between Concessions 1 and 2.	July 28/65.	0.7	172	3	169	R-15290	1,600
CN-20.2	North River at Road Allowance between Concessions 2 and 3.	July 28/65.	1.0	218	4	214	R-15291	2,000
CN-19.2	North River at Road Allowance between Concessions 3 and 4.	June 28/65.	0.7	188	3	185	R-15292	1,200

TABLE II

COLLECTED BY SIMCOE COUNTY HEALTH UNIT

Sampling Point No.	Description	Date	5-Day BOD (ppm)	SOLIDS (ppm)			Lab. No.	M.P.N. Coliform/100 c.c.	
				Total	Susp.	Diss.		Total Col.	E. Coli.
BU-0.55	Bluff Creek 50 ft. from outlet to Lake Simcoe.	July 6/64.						230	230
BU-0.10	Bluff Creek up- stream from Con- cession Rd. 3.	July 6/64.						430	230
BU-1.20	Bluff Creek at Concession Rd. 2.	July 6/64.						430	230
1.	Sparrow Lake - Stanton House Boat House.	July 14/64.						4	0
2.	Sparrow Lake - Stanton House Bathing Area.	July 14/64.						0	0
3.	Sparrow Lake - Stanton House Bathing Area.							23	0
4.	Sparrow Lake - north of Martins Dock.	July 14/64.						43	0
5.	Sparrow Lake at Lake Shore House.	July 14/64.						43	0

TABLE II (CONTINUED)

COLLECTED BY SIMCOE COUNTY HEALTH UNIT

<u>Sampling Point No.</u>	<u>Description</u>	<u>Date</u>	<u>5-Day BOD (ppm)</u>	<u>SOLIDS (ppm)</u>			<u>Lab. No.</u>	<u>M.P.N. Coliform/100 c.c.</u>	
				<u>Total</u>	<u>Susp.</u>	<u>Diss.</u>		<u>Total Col.</u>	<u>E. Coli.</u>
6.	Sparrow Lake at Wildwodd Amusement Hall.	July 14/64.						930	230
7.	Sparrow Lake - Wildwodd Stanton's Home.	July 14/64.						150	23
8.	Sparrow Lake Bayview Bathing Area.	July 14/64.						430	0
9.	Sparrow Lake - Bayview Bathing Area - In Bay.	July 14/64.						230	0
10.	Sparrow Lake - Old Mill Site.	July 14/64.						430	23
11.	Sparrow Lake - Creek Mouth by Wild Echo.	July 14/64.						43	23
12.	Sparrow Lake - West End of Wild Echo Bathing Area.	July 14/64.						43	23
13.	Sparrow Lake - Wild Echo Bathing Area.	July 14/64.						39	9

TABLE II (CONTINUED)

COLLECTED BY SIMCOE COUNTY HEALTH UNIT

<u>Sampling Point No.</u>	<u>Description</u>	<u>Date</u>	<u>5-Day BOD (ppm)</u>	<u>SOLIDS (ppm)</u>			<u>Lab. No.</u>	<u>M.P.N.</u>	
				<u>Total</u>	<u>Susp.</u>	<u>Diss.</u>		<u>Coliform/100 c.c.</u>	
14.	Sparrow Lake - East End of Wild Echo Bathing Area.	July 14/64.						430	430
	Sparrow Lake United Church Camp.								
	(a) West of Bathing Area	July 14/64.						930	23
16.	(b) at dock	July 14/64.						230	230
17.	(c) East of Bathing Area	July 14/64.						9300	2300
18.	Sparrow Lake - Topput Lodge - Biglock.	July 14/64.						9	0
19.	Topput Lodge - small dock North of Laundromat.	July 14/64.						23	0
S-81	North River Branch Oro-Medonte Townline.	July 15/65.						43	3
S-82	North River Branch Hwy. #12 near Wood Property.	July 15/65.						93	93
S-83	North River Branch at Line No. 1 - Twp. of Orillia.	July 15/65.						430	430

TABLE II (CONTINUED)

COLLECTED BY SIMCOE COUNTY HEALTH UNIT

<u>Sampling Point No.</u>	<u>Description</u>	<u>Date</u>	<u>5-Day BOD (ppm)</u>	<u>SOLIDS (ppm)</u>			<u>M.P.N.</u>		
				<u>Total</u>	<u>Susp.</u>	<u>Diss.</u>	<u>Coliform/100 c.c.</u>		
							<u>Lab. No.</u>	<u>Total Col.</u>	<u>E. Coli.</u>
S-84	North River Branch Marchmount Mill above dam.	July 15/65.						930	930
S-85	North River Branch Marchmount Mill below dam.	July 15/65.						230	230
S-86	North River Branch Line No. 2 Orillia Twp.	July 15/65.						24,000	430
S-87	North River Branch Side Rd. No. 1 Concession 2.	July 15/65.						430	230
S-88	North River Branch Line No. 3c -Orillia Twp.	July 15/65.						43,000	930
S-89	North River Branch Line No. 4 Orillia Twp.	July 15/65.						4,300	390
S-90	North River Branch Line No. 5 - Orillia Twp.	July 15/65.						930	230

TABLE II (CONTINUED)

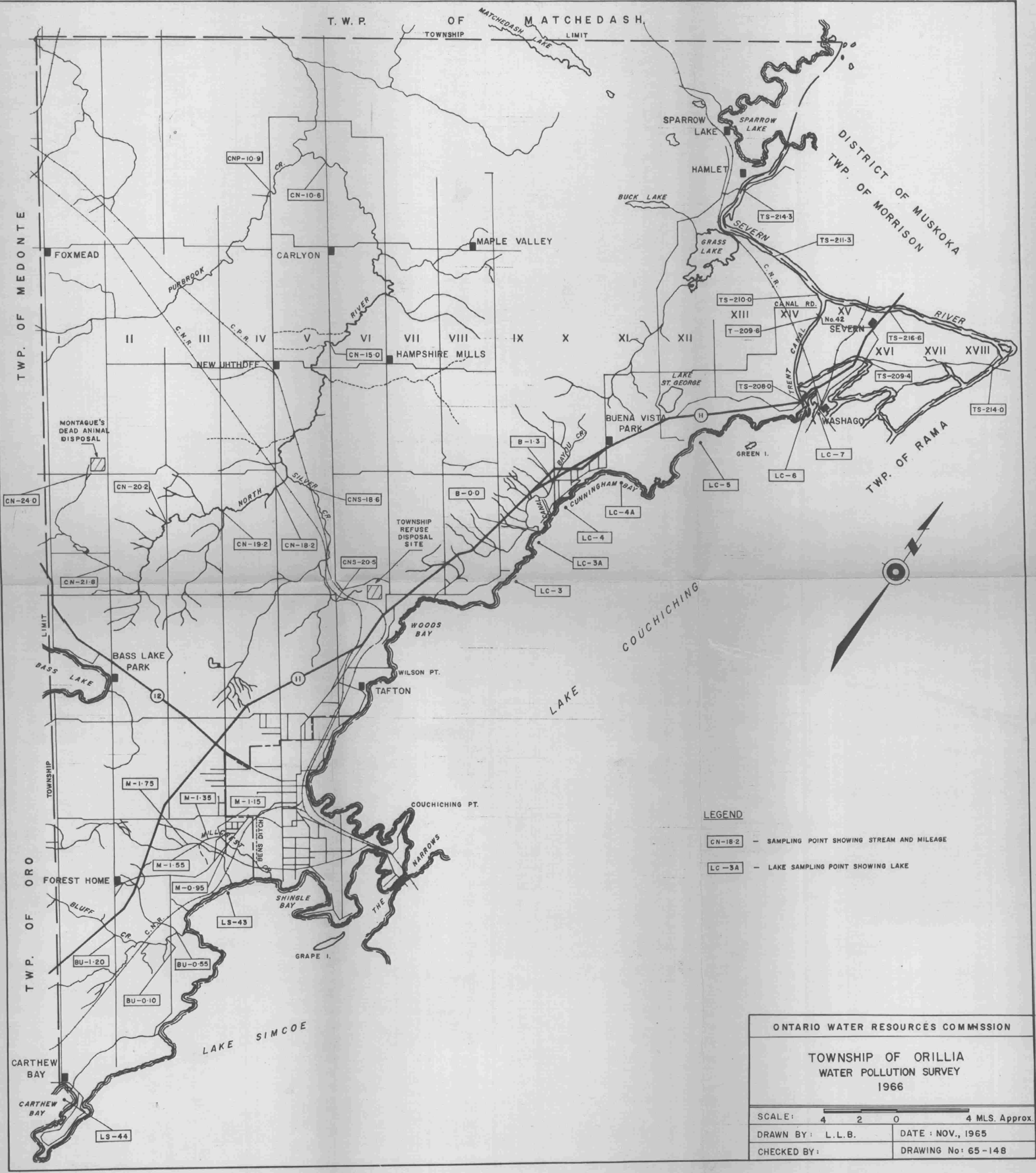
COLLECTED BY SIMCOE COUNTY HEALTH UNIT

<u>Sampling Point No.</u>	<u>Description</u>	<u>Date</u>	<u>5-Day BOD (ppm)</u>	<u>SOLIDS (ppm)</u>			<u>Lab. No.</u>	<u>M.P.N. Coliform/100 c.c.</u>	
				<u>Total</u>	<u>Susp.</u>	<u>Diss.</u>		<u>Total Col.</u>	<u>E. Col.</u>
S-91	North River - Silver Creek Branch - Line No. 5 Orillia Twp.	July 15/65.						430	430
S-92	North River - Silver Creek Branch - Line No. 7 Orillia Twp.	July 15/65.						230	230
S-93	North River - Silver Creek Branch - Line No. 6 Orillia Twp.	July 15/65.						3,900	230
S-94	North River Bass Lake Branch - at Road Allowance between Line 10 and 11 Conc. 5.	July 15/65.						230	230
S-95	North River - Bass Lake Branch - Line No. 6 Conc. 11.	July 15/65.						390	230
S-96	North River - Bass Lake Branch - Line No. 7.	July 15/65.						430	230
S-97	North River - Bass Lake Branch - between line No. 15 and 16 Rd. - Conc. 6 Orillia Twp.	July 15/65.						230	230

TABLE II (CONTINUED)

COLLECTED BY SIMCOE COUNTY HEALTH UNIT

<u>Sampling Point No.</u>	<u>Description</u>	<u>Date</u>	<u>5-Day BOD (ppm)</u>	<u>SOLIDS (ppm)</u>			<u>Lab. No.</u>	<u>M.P.N. Coliform/100 c.c.</u>	
				<u>Total</u>	<u>Susp.</u>	<u>Diss.</u>		<u>Total Col.</u>	<u>E. Col.</u>
S-98	North River - Bass Lake Branch Line No. 6 - Lot 19 Orillia Twp.	July 15/65.						430	430
S-100	North River - Purbrook Creek Branch Line No. 1 - Orillia Twp.	July 15/65.						2,300	930
S-101	North River - Purbrook Creek Branch Line No. 2 Orillia Twp.	July 15/65.						430	430
S-102	North River - Purbrook Creek Branch 15-16 Rd. in Conc. 4 Orillia Twp.	July 15/65.						390	23
S-103	North River - Purbrook Creek Branch Line No. 5 Orillia Twp.	July 15/65.						930	930
S-104	North River at Concession 5 - Orillia Twp.	July 15/65.						230	230



LEGEND

- CN-18-2 - SAMPLING POINT SHOWING STREAM AND MILEAGE
- LC-3A - LAKE SAMPLING POINT SHOWING LAKE

ONTARIO WATER RESOURCES COMMISSION	
TOWNSHIP OF ORILLIA WATER POLLUTION SURVEY 1966	
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